C. Remarks

The last Office Action in the above-identified application has been carefully considered. However, the Examiner's rejection of the originally presented claims in view of the prior art is respectfully traversed.

As described in the application as originally filed, the present invention relates to a chipper knife which can be resharpened or replaced at low cost and is designed in such a way that the cutting edge of the knife is located closer to the top side of the knife at one end than it is at the other. In addition, the knife edge 6 (see Fig. 5) is defined by two guiding surfaces 11 and 13, whose angle relative to the opposed top and bottom surfaces 15, 15' respectively, constantly changes along the length of the knife to provide for the slanting of the knife edge while the angle between the guide surfaces remains the same.

Applicant has attached hereto at Tab A an enlargement of Fig. 5 for the purposes of demonstrating this relationship. In particular, it is seen that the angle α between the guide surface 13 (i.e., the second guide surface) and the bottom surface 15' (i.e., the second body surface portion) of the knife is greater at the end of the knife lying on the plane of the drawing (the second end), than it is at the other (first) end 13' of the knife, which would be beneath the plane of the drawing. Likewise, the angle β between the guide surface 11 (i.e., the first guide surface) and the top surface 15 of the knife (i.e., the first body surface portion) is greater at the far end of the knife below the plane of the paper and illustrated in dotted lines in Fig. 5, than it is at the end of the knife lying on the plane of the paper. However, the angle θ formed between the surfaces 11 and 13 remains constant throughout the length of the knife.

None of the references cited by the Examiner teach or suggest this invention. In rejecting the claims in this application, the Examiner relied primarily on Norman, stating that Norman teaches most of the elements of the claimed invention "except for a first guiding surface having a varying angle along its length, and the second guiding surface having a varying angle along its length." Indeed, the Norman reference does not show a knife having a knife edge formed by two guiding surfaces that are distinct from the knife's upper and lower body surfaces, much less any surface having a varying angle in accordance with the present invention as described above. The Norman reference has a cutting edge designated at the reference letter "A" in Fig. IV of that patent, which has one guiding surface, i.e., the inclined plane directly below the letter A. It has a guiding surface H which is curved, forming the upper surface of the blade and a flat surface unnumbered in Fig. IV forming the bottom of the blade. The angle formed between the curved upper surface H and the unnumbered guiding surface in Norman which forms the cutting edge A is not constant along the length of the knife due to the curvature of surface H. In addition, the unnumbered guiding surface has a constant angle relative to the flat bottom surface along its length. Clearly, the Norman knife has none of the features of Applicant's invention.

While the Norman reference suggests it is an improvement over regular flat knives, it is still a disadvantageous construction since it is expensive to manufacture and would be particularly expensive where replacement of knives is required at short intervals.

Another disadvantage of the Norman-type blade is that due to the presence of the planar guiding surface and the curved upper surface, the actual angle of the cutting edge between those surfaces will vary along the length of the knife. Accordingly, it is not possible to

form the knife with an optimal cutting edge angle over the entire knife length. Instead, the angle at the knife edge between the two surfaces may be too small in one portion of the knife such that breakage of the cutting edge could occur, or it may be too large in another portion of the knife leading to a blunt cutting edge which will deteriorate cutting performance and increase power consumption. A variable cutting edge angle, as provided in the Norman device will also lead to forming wood chips that have a variable size, because a cutting edge with a large angle tends to cut chips having a larger thickness in comparison to a cutting edge having a small angle. This is a great disadvantage in subsequent processing steps for wood chips which normally is for paper manufacturing, which in turn leads to a paper of lower quality and/or increased costs.

The inadequacies of the Norman reference are not supplemented in any way by the Thoma knife. The knife in the Thoma device, as seen in Fig. 4, has a knife edge 24a which is formed between the flat upper surface of the knife, and a guide surface, unnumbered in Fig. 4, but lying against the wood block C and extending to the lower surface of the knife. Thus, Thoma has only a single guide surface forming the knife edge, the angle of which, relative to the bottom surface and to the upper surface of the knife itself, remains constant along its length.

In the rejection the Examiner refers to Claims 1-14, but Claims 1-6 were previously canceled. The rejection further states that Thoma teaches a chip slicer having a knife with a first guide surface having a varying angle, referring to Figs. 6 and 7. Evidently, the Examiner is referring to the fact that as shown in Figs. 6 and 7, the knife edge 24a extends at an angle to the back edge of the knife along its length so that the knife edge is closer to the back edge at one end (the right side as seen in the plan views of Figs. 6 and 7) than it is from the left

end. However, that is not the angle that Applicant is concerned with, or that is defined in the claims. Both independent claims 7 and 11 as presented in the Preliminary Amendment specify that the first and second guiding surfaces, i.e., the surfaces 11 and 13, each have varying angles along its length relative to their associated first and second body portions of the knife, i.e., the surfaces 15, 15'. Moreover, the claims further specify that these two angles vary along the length of the knife in opposite ways so that "the cutting edge angle between the guiding surfaces is essentially constant along the length of the cutting edge while the cutting edge is closer to the first guiding surface at said second end of the cutting edge than it is at the first end." However, for clarity these claims have been amended to state that the cutting edge is closer to the "first body surface portion" at one end than at the other. In the Thoma reference, not only are there not two guiding surfaces that define the knife edge, the angle of the single guiding surface in Thoma relative to the bottom and to the upper surface of the knife does not vary in such a way as to cause the cutting edge to be closer to one body surface at one end than it is at the other. Applicant submits that the claims as originally presented and as amended above clearly define the relationship between the guide surfaces and the opposite sides of the body which allow the cutting edge to be closer to the first guiding surface portion at one end of the knife than it is at the other.

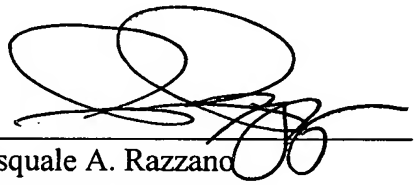
Accordingly, Applicant submits that the claims as amended above fully distinguish over the references and are allowable.

Applicant has added additional claims 15 and 16 to specify more precisely the location of the angles by amending the claims to refer to the guiding surfaces having a varying angle when viewed in cross-section.

In view of the above amendments and remarks, this application is believed to be in condition for allowance, and such action is solicited.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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